***S**ecure **T**echnology **A**dvancing **T**reatment*

Application of SmartCard / Biometrics Technology for **Health Logistics** & Anti-Retroviral Therapy (ART)

Presented by Rovaro Bayard

JSI

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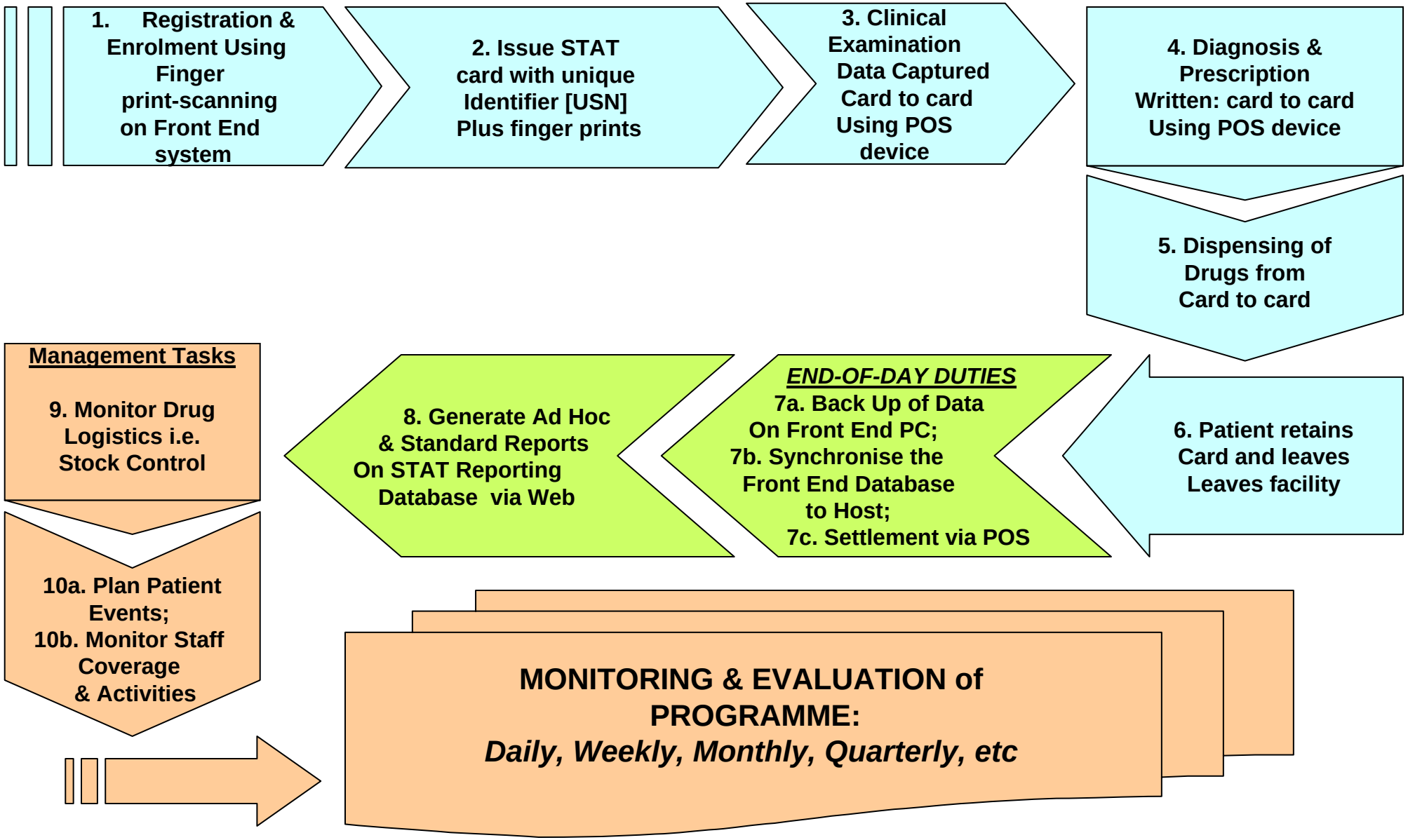
The HIV and AIDS Comprehensive Plan for Care, Treatment and Support (launched Nov 2003)

JSI requested by NDOH HIV/AIDS Chief Director to survey systems available in South Africa that can help with the ARV roll-out, especially in terms of Logistics, Patient Information Systems and Program Monitoring

Patient Information Data: Flow Diagram for ART Treatment



Registering patients
Literally under a tree;

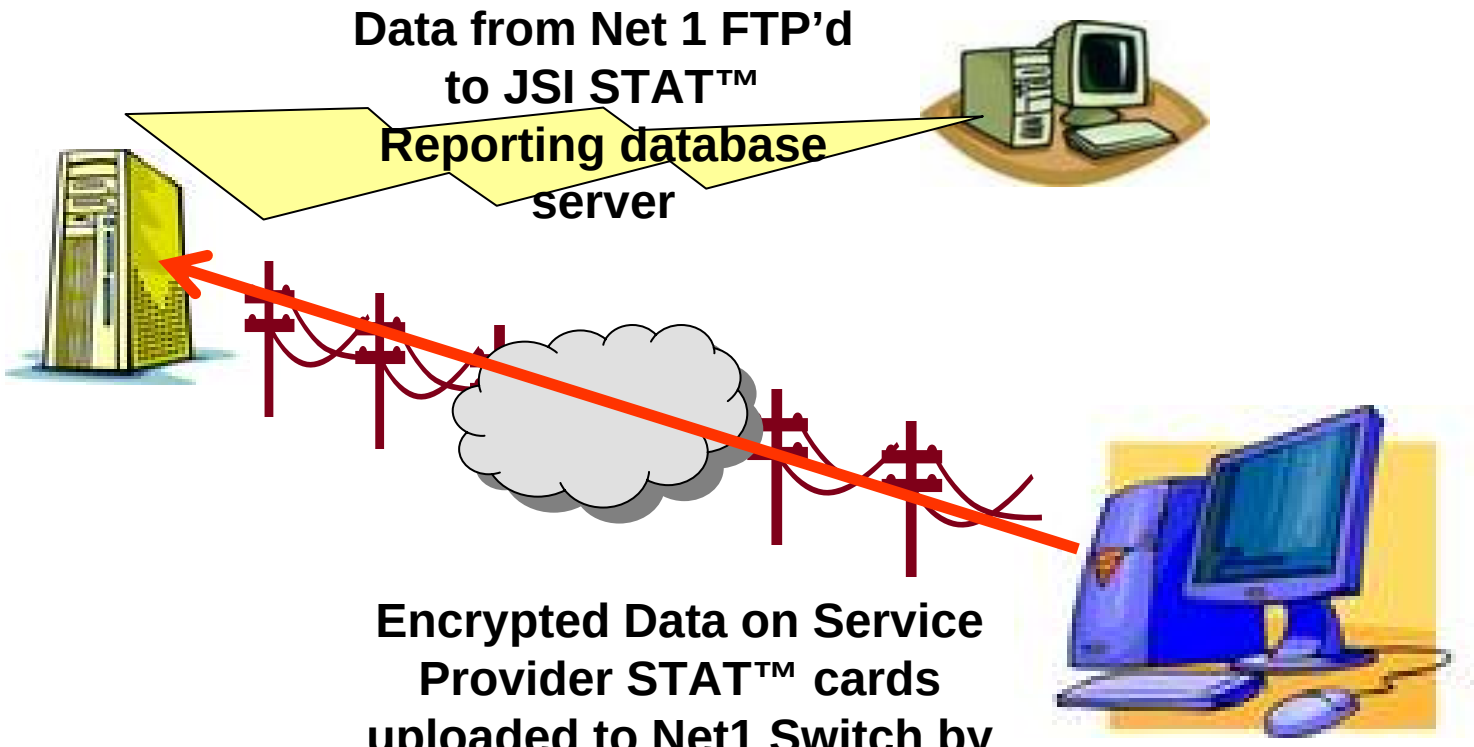
Treating & serving
patients at home in
outreach setting

Innovative use of Toolboxes
and Technology to get valuable
Medicine & treatment in resource
Limited settings

SmartCard/Biometrics Readers

- Portable, rechargeable battery operated card readers;
- Patient and provider cards inserted in card reader;
- Built-in fingerprint scanner;
- LED screen to guide provider through treatment protocol;
- Numeric keypad for data entry.

Data Batch Upload to STAT Reporting Database



ART inventory control, security, & data management:

Incoming drugs entered on pharmacist's STAT™ card and deducted from inventory on hand as drugs dispensed to patients;

ARV stock status uploaded daily to national STAT™ database;

When used correctly, precise consumption data generated to enable accurate forecasting;

Supervisors can check physical inventories against up-to-date stock status data.

Electricity/phone line availability:

- Card readers use rechargeable batteries, no electricity required during home visits;
- Battery pack allows est. 320 patient interactions/single charge;
- Patient visits at ART centers can continue during power outages;
- No need for constant online connection – dialup and upload at end of day only.

As a Planning Tool, Routine Reports may be generated to help Clinicians plan Resources, whether HR Lab, staff for the day, etc

The John Snow Public Health Group Inc.
Co. Reg. No. 2001/024609/510

Patients due for CD4 Count Tests

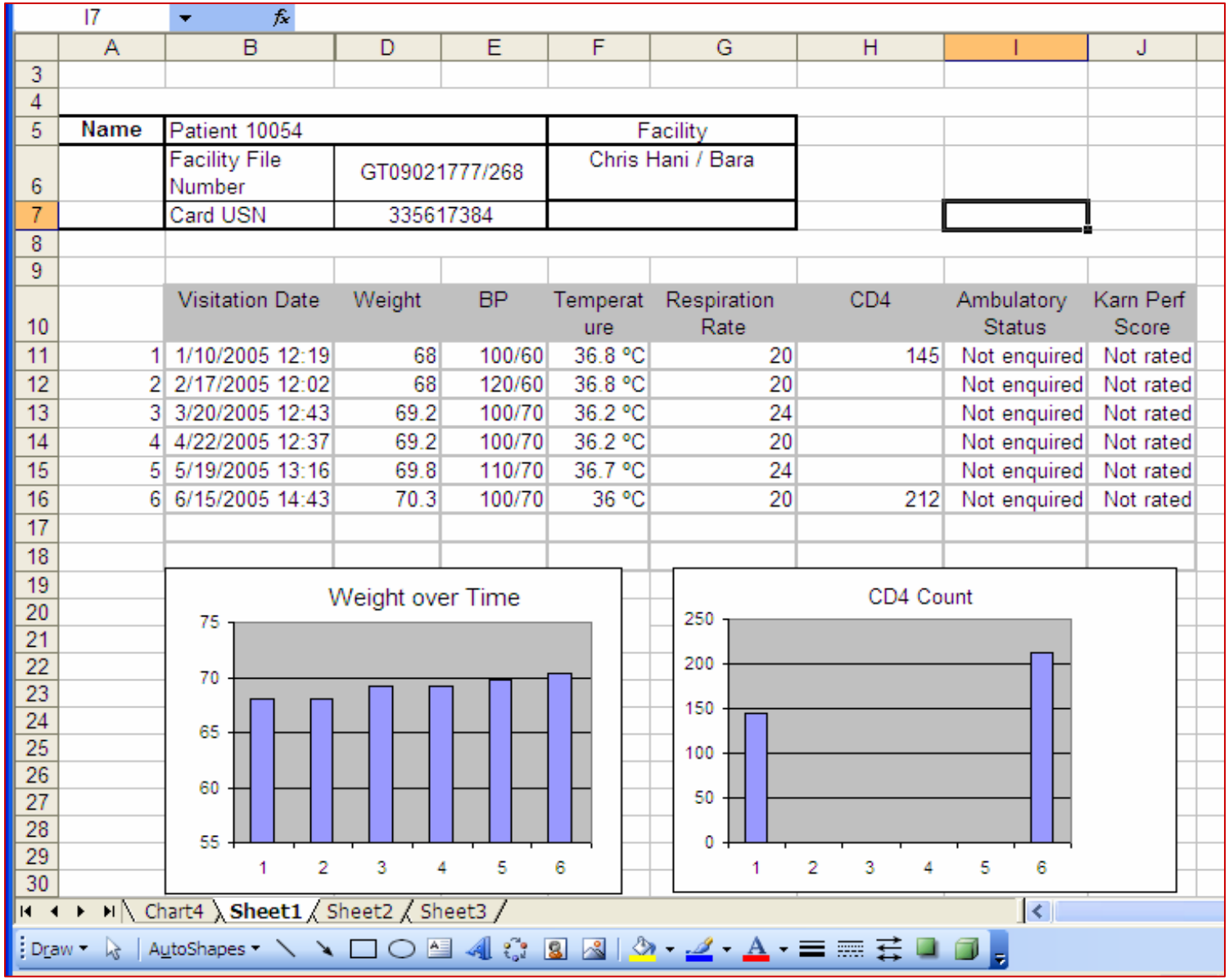
Facility CRS SIZANANI

From 20 Jul 2005

To 30 Aug 2005

#	Facility File Number	Last Test Date	Test Due Date	Last Test Result
1	A37405	5 Feb 2005	5 Aug 2005	105
2	A35405	28 Feb 2005	28 Aug 2005	75
3	A27305	31 Jan 2005	31 Jul 2005	129
4	A28805	7 Feb 2005	7 Aug 2005	172
5	A11204	14 Feb 2005	14 Aug 2005	264
6	A26805	24 Jan 2005	24 Jul 2005	122
7	A31905	23 Feb 2005	23 Aug 2005	246
8	A327	21 Feb 2005	21 Aug 2005	81
9	A26805	24 Jan 2005	24 Jul 2005	122
10	A31905	23 Feb 2005	23 Aug 2005	246
11	A31805	21 Feb 2005	21 Aug 2005	233
12	A31805	21 Feb 2005	21 Aug 2005	233
13	A27305	31 Jan 2005	31 Jul 2005	129
14	A28805	7 Feb 2005	7 Aug 2005	172
15	A27305	31 Jan 2005	31 Jul 2005	129
16	A28805	7 Feb 2005	7 Aug 2005	172

Portable Data:
Snapshot Review
Per patient over
Period of treatment



Name	Patient 10054		Facility
	Facility File Number	GT09021777/268	Chris Hani / Bara
	Card USN	335617384	

	Visitation Date	Weight	BP	Temperature	Respiration Rate	CD4	Ambulatory Status	Karn Perf Score
1	1/10/2005 12:19	68	100/60	36.8 °C	20	145	Not enquired	Not rated
2	2/17/2005 12:02	68	120/60	36.8 °C	20		Not enquired	Not rated
3	3/20/2005 12:43	69.2	100/70	36.2 °C	24		Not enquired	Not rated
4	4/22/2005 12:37	69.2	100/70	36.2 °C	20		Not enquired	Not rated
5	5/19/2005 13:16	69.8	110/70	36.7 °C	24		Not enquired	Not rated
6	6/15/2005 14:43	70.3	100/70	36 °C	20	212	Not enquired	Not rated

Accomplishments to Date:

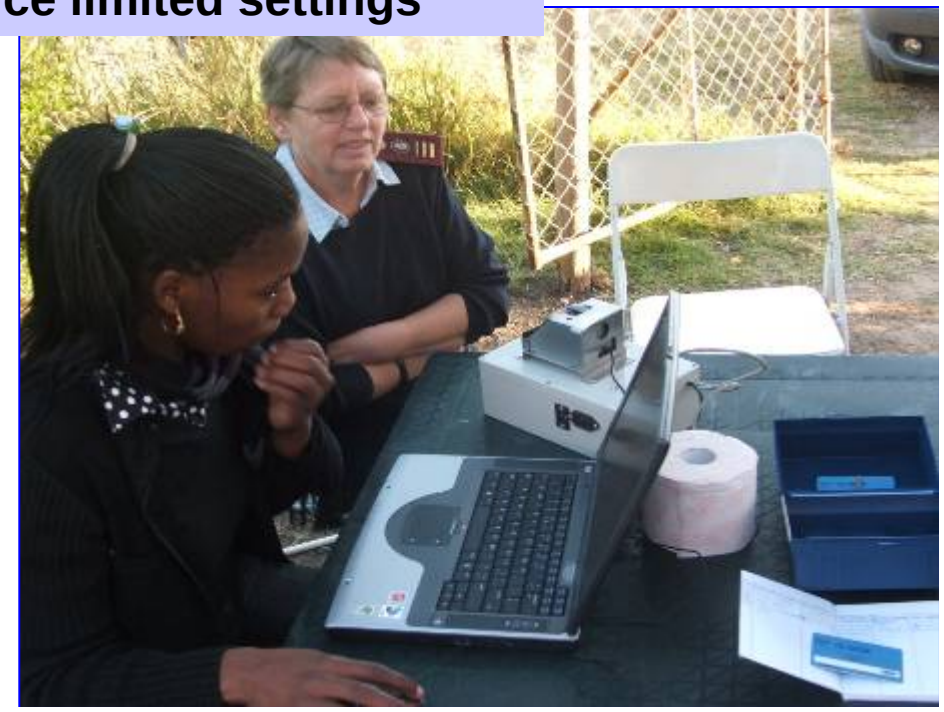
1.Starting JUL-05, installed at 4 CRS 'primary' sites, and 10 'secondary' sites:
Sizanani-Bronkhorstspruit, Tapologo-Rustenburg, St Francis-Boksburg,
St Anne's-Marianhill;

2. Installed at Chris Hani/Baragwaneth in the N'Doro Project - Palliative Care unit
This will also be the site where the TB module will be field tested in co-operation with NDOH TB directorate and the GP provinces' Region10 TB district

3. Installed recently at ODI hospital, working with FPD, who manages a number of ART sites for various hospitals and clinics

At November 2005:
- Total of 1206 ART patients enrolled on STAT;
- Sites are to introduce Care and Support patients as well

One of the many challenges in ART is to make systems available to healthworkers in extremely resource limited settings

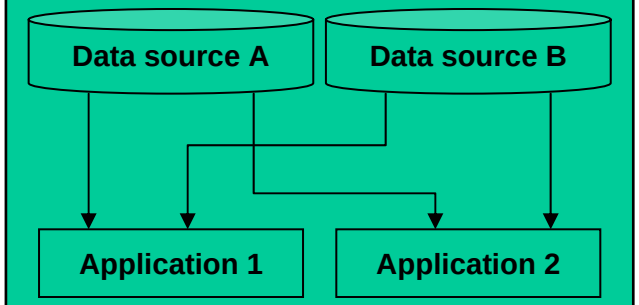


Challenges:

1. Sites need a lot of initial assistance moving form a paper-based culture of operation to electronic recording modes of gathering information.
2. Data capturers & data capturing is not always part of the M&E culture of the sites, making reporting a difficult task.
3. JSI's initial 'free services' not always understood as future payable services by the client: Hardware procurement and NET1's monthly per-patient fee for data transmission
4. Sustainability questions from clients: what happens when PEPFAR no longer pays?
5. Lack of understanding the 'need for strategic information' versus site level deliverables
6. Improvements in communication with all partners – upstream and downstream
7. Requests for providing 'non-core' services and duties
8. Software development time and need for very high levels of securitization/confidentiality
9. Integration of systems: The need for 'Middleware' to span the systems-divide

THREE BASIC TECHNIQUES TO INTEGRATE DATA

Point Solution



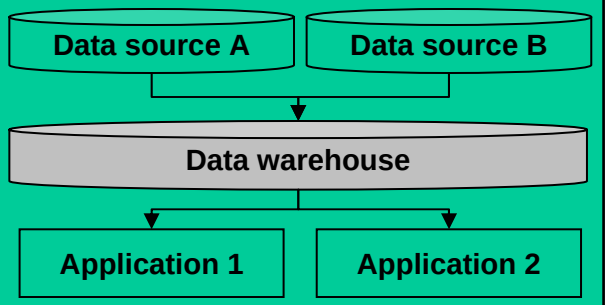
Write custom code to create desired point-to-point integration

Quick and relatively inexpensive to implement

Becomes increasingly unwieldy as number of databases and applications increase

- **Results in number of incompatible point solutions that are difficult and expensive to maintain and upgrade**
- **Rapid deployment and integration of a particular application / database across the enterprise difficult**

Data Warehouses



Pull all information into one large warehouse, which all applications access

All data available to all applications, with consistent means of referencing

- **Local access providing increased speed**

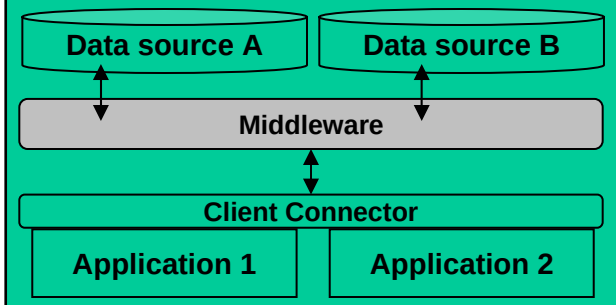
Require long time period to plan and implement

- **Difficult in an environment when future data requirements are unknown**

Require great deal of investment in data cleaning and transformation

- **As well as ongoing maintenance**

Middleware



Employ technologies to link together and applications in a "federated structure"

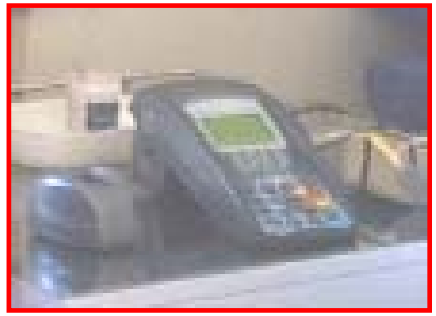
- ***Closed systems* are hardwired with data sources and applications, and adding a new data source / application requires writing new code**
- ***Open systems* create a homogenous object layer to capture data from diverse sources**

Use query technologies such as CORBA, DCOM, SQL and XML to link together databases and applications

Edited Rovaro Bayard - Source: Tripos

Ongoing Collaboration with Public Sector authorities

Gauteng MEC of Health interacting with Sizanani /St Joseph Care Center staff and patient



"Accountability should drive us daily,

& Information must become our friend"

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